ZUJEWSKI, Juliusz Tech.

Structure and asymptotic values of a certain class of decision quantum systems. Prace elektrotech 10 no.3:427-452 '64

1. Department of RadioLocation, Technical University, Warsaw.

KULIKOWSKI, J.L.

Class of adaptive decision systems, optimal in the Bayes'
sense. Archiw elektrotech 13 no.3:525-540 '64.

1. Department of Radiolocation of the Technical University,
Warsaw.

KULIKOWSKI, J.L.

Review of recent development trends in techniques and
theory of signal reception within distrubances.   Przem
inst telekom prace 14 no.45:1-23 '64.

1. Department of Radiolocation, Technical University, Warsaw.

L 2857-66   EPF(n)-2/EWP(1)   IJP(c)   WW/EC

ACCESSION NR: AP5023972   PO/0031/65/010/002/0103/0110

AUTHOR: Kulikowski, J. L. (Kulikovski, Yu. L.)

TITLE: One problem of controlling a plant with random frequency-response
functions

SOURCE: Archiwum automatyki i telemechaniki, v. 10, no. 2, 1965, 103-110

TOPIC TAGS: automatic control theory, linear control system

ABSTRACT: The problem of controlling a linear plant described by the functional
equation

$$y_\mu(t) = \sum_{\nu=1}^{n} \int_{-\infty}^{t} k_{\mu\nu}(t, \tau) \cdot u_\nu(\tau)\,d\tau, \quad \mu = 1, 2, \ldots, m; \quad \nu = 1, 2, \ldots, n, \qquad (1)$$

where $y_\mu(t)$ and $u_\nu(t)$ are output and input signals, respectively, and $k_{\mu\nu}(t, \tau)$
is a frequency-response function which is a random function of time, is analyzed.
This problem consists in determining those control signals $u_\nu(t)$ ($\nu = 1, 2, \ldots, n$)

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L 2857-66
ACCESSION NR: AP5023972
which maximize the performance functional

$$r = \sum_{\mu\nu=1}^{m} r_{\mu\nu} = \sum_{\mu\nu=1}^{m} \frac{1}{T} \int_{t-T}^{t} y_{\mu}(\tau) y_{\nu}(\tau) \, d\tau,$$ (2)

where r is the sum of correlation coefficients between the output values and
T is the length of time during which the output signal was under observation.
The problem is solved for two particular cases: 1) when the norm of the control
signal is bounded; 2) when the norm of the output signal is bounded. This
variational problem was solved by applying the method of Lagrange multipliers.
Systems of linear equations are derived and conditions are established under
which these systems have nontrivial solutions. The problem of realizing the
algorithm for determining the control signals on high-speed computers is considered.
Orig. art. has: 23 formulas.   [LK]

ASSOCIATION: none

SUBMITTED: 00   ENCL: 00   SUB CODE: IE, MA

NO REF SOV: 000   OTHER: 000   ATD PRESS: 4110

Card 2/2

KULIKOWSKI, Juliusz Lech, dr inz.; SEIDLER, J.; REUTT, Antoni, mgr inz.;
    FINDEISEN, Wladyslaw

    Review of technical literature. Przegl elektrotechn 41 no.1:
    29-34 Ja '65.

ACC NR₁   AP7001171   SOURCE CODE: PO/0031/66/011/004/0359/0372

AUTHOR: Kulikowski, Juliusz Lech -- Kulikovski, Yu. L.

ORG: Department of Radar, Warsaw Polytechnic Institute (Katedra Radiolokacji, Politechnika Warszawska)

TITLE: Problems of probability optimization of automatic control system structure

TOPIC TAGS: automatic control system, ~~automation~~, ~~telemechanics~~, probability, system optimization, probability optimization, ~~automatic optimization~~

ABSTRACT: The method of random generation of possible variants of (automatic control) system structures and the selection of the optimal system were studied. It is known that this method is sometimes used to solve problems of large-scale system optimization, especially in complex cases or when a digital computer is used to perform automatic optimization procedures. The problem of choosing the optimum number of optimalizing trials was investigated statistically in order to obtain a maximum gain ("maximum gain" was defined as the difference between the

Card 1/2

ACC NR: AP7001171

gain due to system optimization and trial costs). Two cases are considered: the probability density function for the gain 1° is known a priori 2° is unknown. In each case two types of results were obtained: drawn out results which can be stored and used later, or results which cannot be stored and must be reobtained by random drawing. Formulae are also given which make a decision possible as to whether it is feasible to continue trials or to stop them and accept the results as optimal. Orig. art. has: 3 figures and 42 formulas. [Based on author's abstract] [DR]
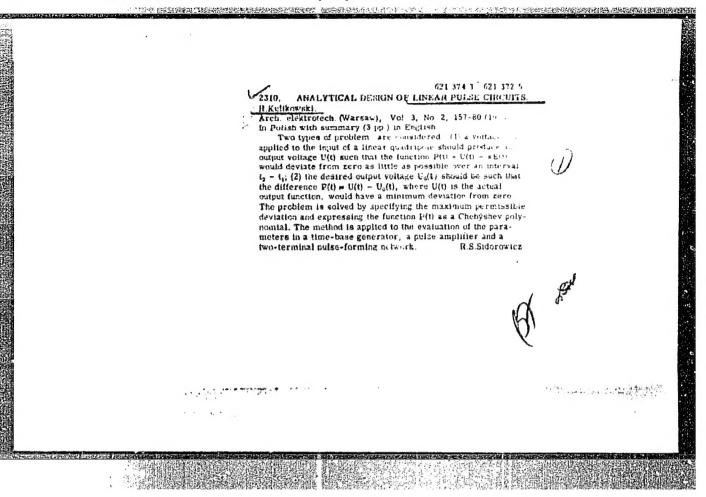
SUB CODE: 12, 13, 09, 14/SUBM DATE: 31Dec65/ SOV REF: 001/ OTH REF: 002/
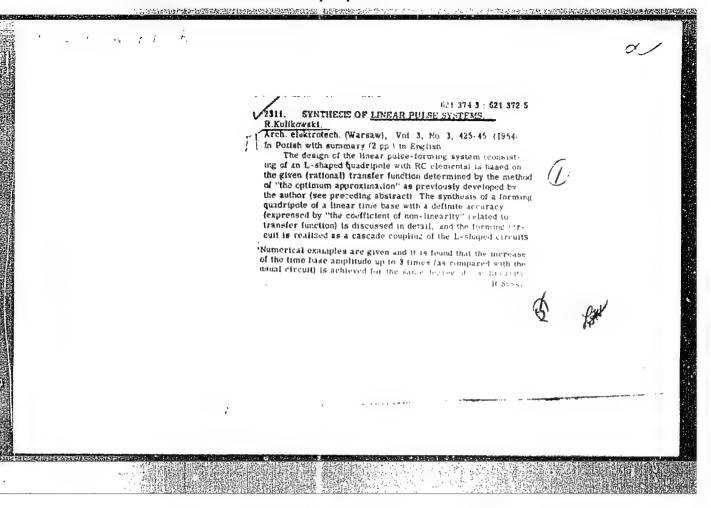
Card 2/2

KULIKOWSKI, R.

Wstep do syntezy liniowych ukladow elektrycznych. (Wyd. 1.) Warszawa, Panstwowe
Wydawn. Naukowe, 1947. 273 p. (Polska Akademia Nauk. Monografie zagadnien
elektrotechniki teoretycznej) (Introduction to the synthesis of linear electric
systems. 1st ed. illus, bibl., footnotes, graphs, index)

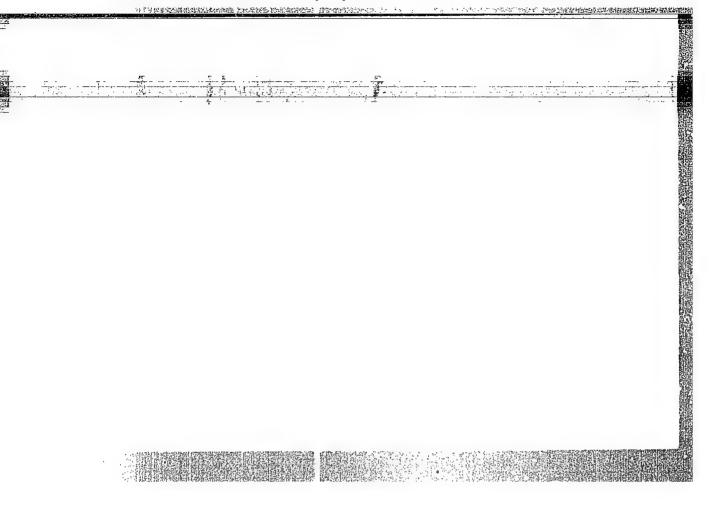SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

2310. ANALYTICAL DESIGN OF LINEAR PULSE CIRCUITS.
R.Kulikowski.

Two types of problem are considered (1) a voltage... applied to the input of a linear quadripole should produce... output voltage $U(t)$ such that the function $P(t) = U(t) - kE^{(t)}$ would deviate from zero as little as possible over an interval $t_2 - t_1$; (2) the desired output voltage $U_0(t)$ should be such that the difference $P(t) = U(t) - U_0(t)$, where $U(t)$ is the actual output function, would have a minimum deviation from zero The problem is solved by specifying the maximum permissible deviation and expressing the function $P(t)$ as a Chebyshev polynomial. The method is applied to the evaluation of the parameters in a time-base generator, a pulse amplifier and a two-terminal pulse-forming network. R.S.Sidorowicz

621 374 3 : 621 372 5

2311.   SYNTHESIS OF LINEAR PULSE SYSTEMS
R.Kulikowski.
Arch. elektrotech. (Warsaw), Vol 3, No 3, 425-45 (1954.
In Polish with summary (2 pp.) in English

The design of the linear pulse-forming system (consisting of an L-shaped quadripole with RC elements) is based on the given (rational) transfer function determined by the method of "the optimum approximation" as previously developed by the author (see preceding abstract) The synthesis of a forming quadripole of a linear time base with a definite accuracy (expressed by "the coefficient of non-linearity" related to transfer function) is discussed in detail, and the forming circuit is realised as a cascade coupling of the L-shaped circuits

Numerical examples are given and it is found that the increase of the time base amplitude up to 3 times (as compared with the usual circuit) is achieved for the same factor of non-linearity.

H. Sesse.

WILSON, C, R.

Piotrowski, J.   Optimum characteristics of linear, det.agnetics.   In English.
p. 53.
BULLETIN, Varsovie, Vol. 3, no. 1, 1955.

SO: Monthly List of East European Accessions, (MLEA), LC, Vol. 4, no. 10, Oct. 1955,
Uncl.

2312.   DETERMINATION OF THE OPTIMUM LINEAR NET-
WORK PARAMETERS BASED ON THE TIME CHARACTER-
ISTICS.   R Kulikowski.
Arch. elektrotech. (Warsaw), Vol 4   no. 2, 323-46 (1955)
In Polish with summary (1 p) in E...
     The optimum parameters are t...   ...d by minimizing
the value of a distance (based on the ...   ...lated to deform-
ation criterion) between the input and output functions con-
sidered in an appropriate metric function space. This case t
C-space of continuous functions was treated in an ...   ... t
paper (see preceding abstracts) so only the example of the
design of the impulsive amplifier with a current feedback
coupling is considered. In the L space of integrable functions
the minimum is found with the help of the Laplace transform,
and the application to the design of an n-stage amplifier is
given. In the L²-space of functions whose square is integrable
the minimum is found from the convolution property of
Laplace transforms The detailed discussion is given of a
two-stage pulse amplifier (unit step input), amplifiers with a
correction (negative exponential input), and the optimum
coupling coefficient in a resonance amplifier (delayed unit
step input) Wiener's method of optimum filtering (for station-
ary signals with given power spectra) is also quoted Finally,
an automatic programme regulation of a ... ...t-h metric meas-
uring circuit is discussed
                                                    R Syski

arch. cimatraloch. (Warsaw)

MINIMUM STOCHASTIC SIGNAL DISTORTIONS IN
LONG-WAVE WAVEGUIDE

621.372.5

4293.   Optimum characteristics of linear pulse systems. R. KULIKOWSKI AND J. PLEBAŃSKI *Bull. Acad. Polon. Sci.* C1. 4, 3, No. 1, 23-8 (1955)

The determination of the response function (and hence the frequency characteristic) of a linear network corresponding to pulse excitation with minimum distortion, leads to a variational problem of the isoperimetric type. Uniqueness of solution is considered and the results are applied to various types of linear filter.

O. D. JBN

KULITOAWICKI R.

V. IPPANISKI, R.

KULIKOWSKI, R.;RYBARSKI, A.

KULIKOWSKI, R.;RYBARSKI, A. Criterion for wquare root distortion at a limited noise power.
p. 379.

Vol. 5, no. 2, 1956
ARCHIWUM ELECKTROTECHNIKI
TECHNOLOGY
Warszawa, Poland

So: East European Accession, ol. 6, no. 2, Feb. 1957

Kulikowski, R.

POLAND/Radio Physics - General

I-1

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 11244

Author : Kulikowski R.
Inst   : Technical University, Warsaw, Poland
Title   : Estimation Methods in the Theory of Nonlinear and Time
          Variable Filters

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, 243-251, XXII

Abstract : A method is considered, permitting the determination of the
           range of a solution of a system of nonlinear differential
           equations describing a certain wide class of nonlinear fil-
           ters with variable parameters. Using specific examples, the
           author shows that this method can be used to determine the
           upper limit of the amplitude of the output signal, effective
           and mean-squared distortions, the limits (upper and lower)
           of the signal to noise ratio, and the stability conditions
           under random disturbances.

Card   : 1/1

Kulikowski R

POLAND/Radio Physics - General

I-1

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 11245

Author   : Kulikowski R.
Inst   : Technical University, Warsaw, Poland
Title   : Uniform Realization of Operators by Means of Linear Elements

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, No 4, 253-260, XXIII

Abstract : The author considers problems of the synthesis of certain lin-
           ear and nonlinear filters, specified by the operation $e_2(t)$
           $Ae_1(t)$, where $e_1(t)$ and $e_2(t)$ are the input and output signals
           respectively, and A is an operator in functional space. By
           way of a measure of the approximation to the given operator A,
           the author chooses the Chebyshev metric D: the error $\Delta = \max$
           $|Ae_1 - A_n e_1|$, where A_n is the realized operator. In particular,
           the author considers the realization of the proportionality
           operator with the aid of a two-port RC high pass and low pass
           network, and also integrating and differentiating RC networks.

Card   : 1/1

KULIKOWSKI, R.

POLAND/Radio Physics - Statistical Phenomene in Redio Physics   I-2

Abs Jour : Ref Zhur - Fizike, No 10, 1958, No 23465

Author   : Kulikowski R.
Inst   : Polish Academy of Sciences, Warsaw
Title   : Signal to Noise Ratio and Distortions of Band Limited
            Signals

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, No 6, 341-347, XXXII

Abstract : A general analysis is presented of communication systems
            from the point of view of maximalization of the signal to
            noise ratio and minimization of the distortion q =max u-o
            (o and u are respectively the signals at the input and the
            output) at the output. Certain results are obtained for a
            definite class of nonlinear systems. By way of examples, the
            author considers a tuned n-stage amplifier and photoelectric
            or magnetic reproduction.

Card   : 1/1

I.

POLAND/Radio Physics - Reception of Radio Waves.

•   Abs Jour   :   Ref Zhur - Fizika, No 7, 1959, 16205

Author   :   Kulikowski, R.
Inst   :   -
Title   :   On the Theory of the Nonlinear AM Receiver

Orig Pub   :   Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 4,
                235-240

Abstract   :   The author considers AM receivers, made up of linear
                (high frequency and intermediate frequency) and non-
                linear (detector) four-terminal networks. The potimun
                functions are calculated such as to insure the maximum
                of the signal to pulse noise ratio in the case of linear
                and quadratic detectors. The transfer functions of re-
                ceivers that insure a minimum rise time of a pulse signal
                at the output of the receiver at a specified pulse noise
                level are determined. The author also considers the ra-
                tio of signal to pulse noise for the most unfavorable

Card 1/2

POLAND/ Radio Physics - Reception of Radio Waves.   I.

Abs Jour   : Ref Zhur - Fizika, N. 7, 1959, 16205

             case of a signal with a limited frequency band.

Card 2/2

- 103 -

POLAND/Radio Physics - General Problems.   I

Abs Jour   : Ref Zhur Fizika, No 10, 1959, 23191

Author   : Kulikowski, R.

Inst   : Academy of Sciences, Technical University, Warsaw,
              Poland

Title   : On the Theory of Nonlinear Oscillators.

Orig Pub   : Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 6,
              353-358

Abstract   : The method of analysis of nonlinear oscillating systems,
              which is based on the energy-balance relations during one
              cycle of oscillations, is generalized to include the case
              when the systems contains elements with nonlinear and
              time-dependent characteristics. The class of systems to
              which this method can be applied is indicated. Also con-
              sidered is the problem of the stability of nonlinear

Card 1/2

POLAND/Radio Physics - General Problems.   I

Abs Jour   : Ref Zhur Fizika, No 10, 1959, 23190

             for the frequency stability of an oscillator having the
             foregoing characteristic in the form of a polynomial of
             the n-th degree. -- Yu. M. Romanovskiy

Card 2/2

- 80 -

KULIKOWSKI,R.

Synthesis of a class of optimum control systems. Bul Ac Pol tech
7 no.11:663-671 '59.   (EEAI 9:6)

1. Communications Theory Department, Institute of Basic
Technical Problems, Polish Academy of Sciences. Presented by
P.Szulkin.
          (Automatic control)

KULIKOWSKI,R.

On the synthesis of adaptive systems. Bul Ac Pol tech 7 no.12:
697-707 '59.   (KEAI 9:6)

1. Communications Theory Department, Institute of Basic
Technical Problems, Polish Academy of Sciences. Presented by
P.Szulkin.
          (Automatic control)   (Series)   (Frequency)

KULIKOWSKI, R.

Synthesis of optimum control systems with area-bounded control signal.
Bul Ac Pol tech 8 no.4:179-186 '60.   (EEAI 9:10)

1. Communications Theory Department, Institute of Basic Technical
Problems, Polish Academy of Sciences and Department of Ultra-Short
Waves Technics, Warsaw Technical University. Presented by P.Szulkin.
        (Automatic control)   (Control systems)

KULIKOWSKI, R.

Concerning a class of optimum control systems. Bul Ac Pol Tech 8
no.10:595-600 '60.

1. Communication Theory Department, Institute of Basic Technical
Problems, Polish Academy of Sciences. Presented by P. Szulkin.

KULIKOWSKI, R.

On the synthesis of optimum sampled-data control systems. Bul
Ac Pol Tech 8 no.11/12:673-679 '60.

1. Communication Theory Department, Institute of Basic Technical
Problems, Polish Academy of Sciences and Department of Ultra-Short
Waves Technics, Warsaw Technical University. Presented by P.Szulkin.

KULIKOWSKI, Roman

On optimal control systems. Archiw automat 6 no.2/3:235-296 '61.
(EEAI 10:9)

1. Katedra Techniki Fal Ultrakrotkich Politechniki Warszawskiej i
Zaklad Teorii Lacznosci Instytutu Podstawowych Problemow Techniki
Polskiej Akademii Nauk.

(Automatic control)

J

37653
S/124/62/000/005/001/048
D251/D308

$16,8000$

AUTHOR: Kulikowski, R.

TITLE: Optimalization of multidimensional control systems by
             Monte Carlo methods

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 5, 1962, 15,
             abstract 5A123 (Bull. Acad. polon. sci. Ser. sci. techn.
             1961, v. 9, no. 2, 113 – 121)

TEXT: A multidimensional system is considered in which a non-line-
ar regulated system is described by a positive symmetric operator

$$y(x) = y(x_1, \ldots, x_n) = \alpha_0 + \sum_{i=1}^{n} \alpha_i \left(\sum_{k=1}^{n} \beta_{ik} x_k - \gamma_i \right)^2$$ where y is

the output of the system, x_i are the inputs of the system, α_i, β_{ik}
γ_i are real numbers ($\alpha_0 > 0$), $x_i = \hat{x}_i + n_i(t)$ ($\hat{x}_i$ is the action of
the regulator, $n_i(t)$ are the resistances which have known functions

Card 1/2

Optimalization of multidimensional ...   S/124/62/000/005/001/048
D251/D308

of likelihood distribution. There also act on the regulated system and on its output known random resistances $n(t)$ and $n_0(t)$. It is necessary to choose $x_i = \bar{x}_i$, such that $y(\bar{x}_1, \ldots, \bar{x}_n) = \min_{x \in \underline{S}}[y(x_1, \ldots, x_n)] = \alpha_0$. In the presence of random resistances the $\bar{x}_i$ will be random functions of time. A method of seeking an extremum is proposed by means of random variation of the inputs x_i, based on the Monte Carlo method. The possibility is considered of reducing the statistical error by applying the so-called Importance Sampling and also the possibility of reducing the influence of the resistances. Control systems are constructed with the aid of analog or digital computers. Systems based on random search of this type are the more effective for a greater number of controlled inputs and a higher resistance level. [Abstractor's note: Complete translation].

Card 2/2

/l.8000

AUTHOR: Kulikowski, R.

TITLE: Optimizing non-linear control systems comprising non-stationary inertial and non-linear elements

S/194/62/000/006/054/232
D295/D308

TEXT: The problem is considered of minimizing the functional

$$F(x) = \lambda \int_0^T x^2(t)dt - \int_0^T P_{T_0} A(x)dt,$$

which depends on the function $x(t)$ and is a performance index of the system. Here $x(t)$ is the function that is applied to the input of the controlled object, $A(x)$ is an operator (in general non-linear) which operates on the input function of the controlled object, and $P_T[y(t)]$ is a linear operator which transforms any given function $y(t)$ into a function $y(t, T_0)$.

Card 1/2

Optimizing non-linear control ...   S/194/62/000/006/054/232
                                         D295/D308

The problem is solved for operators $P_{T_0}[A(x)]$ having the form of determined integral relations. On the basis of general theorems of functional analysis the necessary condition is derived as well as a sufficient condition for the indicated functional to be a minimum. It is suggested to use an iterative process, based on the principle of contracted representations for solving the integral equations obtained. 4 references. [Abstractor's note: Complete translation.]

Card 2/2

NR: AI4049209

SUBMITTED: 18Sep62   ENCL:

KULIKOWSKI, Roman

Adaptive optimization of systems with human operators. Archiv automat 8 no.2:135-158 '63

1. Katedra Techniki Fal Ultrakrotkich, Politechnika, Warszawa, i Zaklad Teorii Lacznosci, Instytut Podstawowych Problemov Techniki, Polska Akademia Nauk, Warszawa.
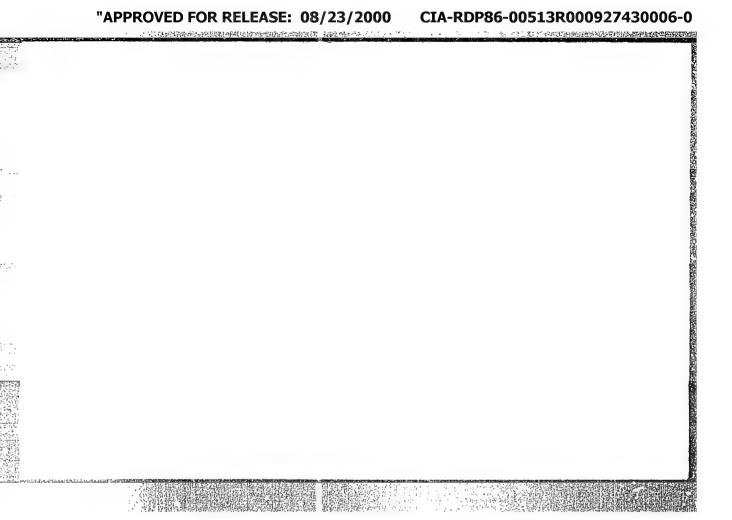
Kulikowski, Roman (Kulikovsk , R)

KULIKOWSKI, Roman

Adaptive optimizing of large systems with hierarchic control structure. Archiw automat 9 no.4:329-356 '64.

1. Department of Automation and Telemechanics of the Technical University, Warsaw, and Institute of Automation of the Polish Academy of Sciences, Warsaw.

L 26684-66   EWP(1)   IJP(c)

ACC NR: AT6014784   SOURCE CODE: GE/2503/65/000/002/0424/0428

AUTHOR: Kulikowski, R.   49
                                                         β+1

ORG: Institute of Automation, Polish Academy of Sciences, Warsaw (Polska Akademia
Nauk, Instytut Automatyki)

TITLE: Nonlinear dynamic identification

SOURCE: Akademie der Wissenschaften, Berlin. Klasse fur Mathematik, Physik und
Technik. Abhandlungen, no. 2, 1965. Berlin, 1966. III. Konferenz uber Nicht-
lineare Schwingungen, Berlin, 1964. Teil II: Technische Schwingungsprobleme und
Fragen der Regelung und Steuerung (Third Conference on Non-linear Vibrations. pt. 2:
Technical vibration problems and questions of regulation and control), 424-428

TOPIC TAGS: nonlinear operator, linear operator, linear system, dynamic system,
signal identification, Taylor series, signal correlation

ABSTRACT: The experimental identification of the nonlinear operator A, which describes
the dynamics of the nonlinear system, is discussed. The identification process is
based on the observation of an output signal corresponding to an input signal of the
system. Problems of this type are of interest in the case of automatic-control
of systems unknown to an operator, such as those of aircraft or technological pro-
cesses. It is assumed that the nonlinear operator A in the χ space of input signals
can be differentiated at least n times and that it can be expanded into a generalized
Taylor series in which each term A_i is a nonlinear operator. It is further shown

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L 26684-66

ACC NR: AT6014784   0

that the unknown nuclei of the integral operators A_i can be experimentally deter-
mined by means of small changes in the input step signal and by observation of
corresponding changes at the system's output. Stationary noise can be used as an
input variation, while the unknown functions describing the nuclei can be identified
by means of a correlation technique. The method proposed can be regarded as an
extension of the known correlation technique, which is often used in automatic con-
trol for the identification of linear systems. Orig. art. has: 9 formulas and
1 figure. [Translation of author's abstract.]   [AM]

SUB CODE: 12/ SUBM DATE: none/ OTH REF: 002/ SOV REF: 001

Card 2/2· BLG

POLAND

KULIKOVSKI, Roman

Dept. of Optimization Theory, Automation Institute, Polish Academy
of Sciences (Instytut Automatyki PAN, Zaklad Teorii Optymizacji)

Varsav, <u>Archivum automatyki i telemechaniki</u>, No 2, Apr-Jun 1966,
pp 131-145

"Optimum control of dynamic interacting systems."

L 00848-67 EWP(c)/T/EWP(v)/EWP(k)/EWP(h)/EWP(1) IJP(c)

ACC NR: AP6029481   SOURCE CODE: PO/0031/66/011/002/0131/0146

AUTHOR: Kulikowski, Roman--Kulikovski, Roman

ORG: Department of Optimization Theory, Institute of Automation, Polish Academy of Sciences (Instytut Automatyki PAN, Zaklad Teorii Optymizacji)

TITLE: Optimum control of dynamic interacting systems

ABSTRACT: The author investigates the problem of optimum control of multi-dimensional plants described by linear operators and a quadratic performance functional in Hilbert space. The condition of optimality, defined by the "principle of reflected images", is formulated, and a solution of the problem is obtained by using analog and digital devices. It is shown that by using first-level controllers, originally designed for single input-output operations, and second-level controllers, which effect an exchange of information, it is possible to solve large-

Card 1/2

L 00848-67

ACC NR: AP6029481   /

scale optimization problems. It is also shown that analogous methods may be used
to solve nonlinear processes and more complex quality control functionals.
[Based on author' s abstract]   [SP]

SUB CODE: 12/   SUBM DATE: 11Oct65/ ORIG REF: 001/ SOV REF: 003/
OTH REF: 006/

Card 2/2   pb

POLAND

KULIKOWSKI, Roman

Institute of Automatic Control, Polish Academy of Sciences

Warsaw, Archiwum automatyki i telemechaniki, No 3, July/Sept 1966, pp 227-53

"Optimization of aggregated dynamic systems."

ABSTRACT: This article deals with the problem of optimizing aggregated dynamic systems composed of independent dynamic subprocesses controlled by actions resulting from the common control resources and contributing to the common goal. It can be considered as an extension of the results presented in his paper at the Third IFAC Congress and in the article published in "Advances in control theory," Academic Press Inc., New York, 1966. It is shown that by applying the concepts of the optimum performance characteristic and aggregation, the dynamic optimization problem can be reduced to a problem of nonlinear programming. For particular types of optimal performance characteristics of the controlled processes, the solution of the optimization problem can be reduced to the solution of linear equations. A simple higher-order controller regulating the distribution of control resources for performing single operations which are controlled by lower-order controllers can be constructed. The explicit form of the optimal performance characteristics of control for processes described by functionals defined in L^p space or for

Card 1/2

L 08934-67

ACC NR: AP6031530   /

quadratic functionals in Hilbert space are determined. After this, the problem of optimizing the aggregated systems, including a concrete example of the PERT system, is analyzed. Orig. art. has: 10 figures and 64 formulas.   [LK]

SUB CODE: 12/ SUBM DATE: 20Dec65/ ORIG REF: 003/ OTH REF: 013/
SOV REF: 001/

KULIKOWSKI, T.

On a programming of simple arithmetic expressions.
Bul Ac Pol mat 12 no. 1: 51-52   '64.

1. Institute of Mathematics, Polish Academy of Sciences,
    Warsaw. Presented by A. Mostowski.

KULIMANIN, M. M.

Cand Tech Sci - (diss) "Study of the process of formation of precipitates in the filtration of fibrous mass of wood sulfate cellulose." Leningrad, 1961. 12 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Lenin Forestry Engineering Academy imeni S. M. Kirov); 150 copies; free; (KL, 7-61 sup, 239)

KULIMANN, Lajos, okleveles gepeszmernok

Current questions relating to the maintenance of railroad
traction vehicles.   Jarmu mezo gep 8 no.4:130-135 Ap '61.

1. MAV foeloado.

ZAKHVATKIN, V.K.; KULIMIN, S.G.; GEORGIYEV, K.T.; VECHINOV, D.K.

Increasing the output of flotation equipment at Bulgarian
ore dressing plants. TSvet. met. 38 no.9:18-25 S '65.
                                              (MIRA 18:12)

L 12675-66   EWT(d)/EWT(m)/EWP(v)/EWP(j)/T/EEP(k)/EEP(h)/EEP/EEP(a)   WW/RE

ACC NR: AP6001002   SOURCE CODE: UR/0286/65/000/022/0070/0070

AUTHORS: Bogdanov, A. M.; Kulin, F. I.; Melent'yev, P. V.; Stalevich, A. M.;
Tiranov, V. G.

ORG: none

TITLE: Device for mechanical testing of materials. Class 42, No. 176448

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 70

TOPIC TAGS: tensile test, polymer rheology

ABSTRACT: This Author Certificate presents a device for mechanical testing of
materials, e.g., polymers, for extensibility. The device contains a system of two
clamps for fastening the material sample. One clamp is fixed and is mechanically
coupled to the force-measuring instrument. The other clamp is movable in the
vertical direction, applies the load to the stretching sample, and is connected to
a device for measuring the sample deformation. To automate the process of deformation
measurement, the movable clamp is provided with a contact device and a support for
free placing of the load on the stretching sample. The contact device in the form of
a nut on the screw axle of an electric motor closes the motor circuit when the nut
touches the load descending as a result of the sample stretching. The force-measuring
element of the device, in the form of an elastic beam, bends under the action of the

Card 1/2   UDC: 620.72

L 13625-66

ACC NR: AP60C1002   0

force applied to the upper clamp of the device. A switch on the free end of the
beam closes with a contact fastened to a nut placed on the screw axle of an
electric motor. When the circuit is closed, motion of the nut mounted on the motor
axle continues until the contact is broken.

SUB CODE: 11/   SUBM DATE: 06Apr64

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KULIN, GY.

"Photography of the 'Meteoric Phenomenon' Successful."   P. 758   (TERMES ET
ES TARSADALOM. Vol. 113, No. 12, Dec. 1954; Budapest, Hungary.)

So: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4,
April 1955, Uncl..

KULIN, GY.

The Urania workshop in the service of adult instruction in astronomy.
p. 439

Vol. 114, no. 7, July 1955
TERMESZET ES TARSADALOM
Budapest

Source: Monthly list of East European Accession, (EEAL), LC,
    Vol. 5, no. 3, March 1956

KULIN, GY.

Szilard Zerinvary's Nap, fold, emberiseg (Sun, Earth, Mankind); a book review. p. 447

Vol. 114, no. 7, July 1955
TERMESZET ES TARSADALOM
Budapest

Source: Monthly list of East European Accessions, (EEAL), LC.
     Vol. 5, no. 3, March 1956

KULIN, GY.

The Arend-Roland comet. p. 27.

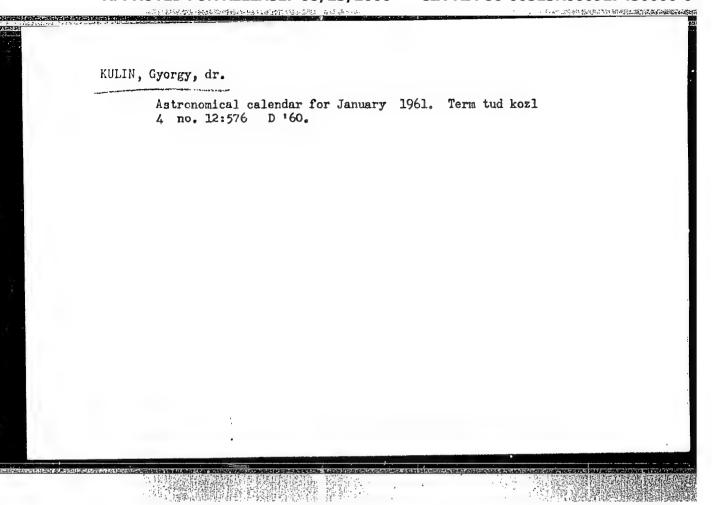(Fizikai Szemle. Vol. 7, no. 1, Feb. 1957. Budapest, Hungary)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

KULIN, Gyorgy

Celestial mechanics of artificial moons and space flight.
Fiz szemle 8 no.2:35-40   F'58

1. Urania Csillagvizsgalo.

KULIN, Gyorgy, dr.

Astronomical calendar for January 1961. Term tud kozl
4 no. 12:576 D '60.

KULIN, Gyorgy, dr.

Do·changes in our distance from the sun cause it that in the
morning and afternoon we can look toward the sun, but cannot
during the noon hours? Elet tud 14 no.43:1351 23 0 '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudo-
many" szerkeszto bizottsagi tagja.

KULIN, Gyorgy

> Why can the circumference of the new moon be seen so
> sharply while the other parts of the circle are completely
> dark? Elet tud 15 no.16:482 17 Ap '60.
>
> 1. Urania Csillagvizsgalo igazgatoja, es "Elet es
> Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

       Polarizing varioscope. Elet tud 15 no.27:851 3 Jl '60.

       1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

On the Capella star red, bluish, and yellowish lights alternate
instead of the customary vibration. What is the cause of it?
Elet tud 15 no.43:1350 23 0 '60.

1. "Elet és Tudomany" szerkeszto bizottsagi tagja, es Urania
Bemutato Csillagvizsgalo igazgatoja.

KULIN, Gyorgy, dr.

What is the cause for the 11-year-old sunspot period? Is it
possible that the motion of Jupiter has an effect on it? Elet
tud 15 no.50:1570 11 D '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudo-
many" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

Is it true that during the sunspot maximum period, the chemically unknown, so-called "death rays" were detected? Elet tud 15 no.51:1610 18 D '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

The age of elements. Elet tud 16 no.11:328-330 12 Mr '61.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

We observed the solar eclipse in Bulgaria. Elet tud 16 no.13:392-395
26 Mr '61.

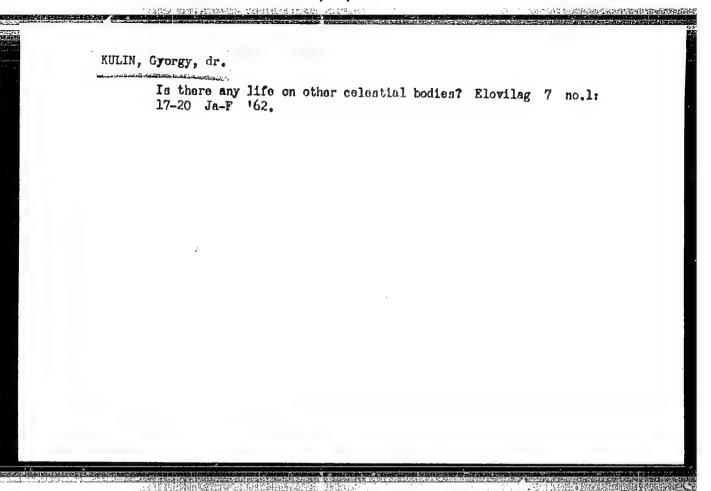1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

The cause of the March 4 celestial phenomenon. Elet tud 16 no.15:450
9 Ap '61.

1. Ukrania Bemutato Csillagvizsgalo igazgatoja,es "Elet es Tudomany"
szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

The earth does not rotate evenly. Elet tud 16 no.47:1475-1478 19
N '61.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

Is there any life on other celestial bodies? Elovilag 7 no.1:
17-20 Ja-F '62.

KULIN, Gyorgy, dr. .

Is the conjunction of satellites ill-omened? Elet tud 17 no.4:108-110
Ja '62.

1. Tudomanyos Ismeretterjeszto Tarsulat Urania Bemutato Csillagvizsga-
lojanak igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

"Galileo Galilei" by Ludovico Geymonat. Reviewed by Dr. Gyorgy Kulin.
Elet tud 17 no. 14:442. Ap '62

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr. (Budapest)

Where does the space beyond the atmosphere of the earth
begin? Elet tud 17 no. 16: 482 22 Ap '62.

1. Urania Bemutato Csillagvizsgalo igazgatoja; "Elet es
Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

      Men in cosmos. Elet tud 17 no.21:647-651 My '62.

      1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy

Was the Tunguska catastrophe caused by a nuclear blast?   Elet tud
17   no.40:1251-1254   7 0 '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

"The development of Darwinism" by Istvan Benedek. Reviewed by
Dr.Gyorgy Kulin. Elet tud 17 no.40:1272 7 0 '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

The secret of tektites. Elet tud 17 no.43:1367-1369 28 O '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy, dr.

First national meeting of Hungarian amateur astronomers.
Konzerv paprika no.5:527-528 S-0'63

L 17198-63   EPA(b)/EWT(1)/FCC(w)/FS(v)-2/BDS/ES/w   AFFTC/AFMDC/
ESL-4/APGC/SSL   Pd-4/Pe-4/Pg-4/Po-4/Pq-4   TF
                                H/0016/63/000/006/0178/0181

ACCESSION NR: AP3005715   84
                                                                83

AUTHOR: Kulin, Gyorgy

TITLE: Natural earth satellites

SOURCE: Fizikai szemle, v. 13, no. 6, 1963, 178-181

TOPIC TAGS: Natural earth satellite, moon, moon-earth system, satellite orbit,
Lagrange-type libration point, three-body problem, astronomy, Lagrange, libration

ABSTRACT: The three-body problem, assuming that the mass of one of the bodies
is negligible compared to that of the other two, was applied to the investigation
of potential orbits of natural earth satellites other than the moon. Five
Lagrange-type libration points were discussed. These points maintain their rela-
tive positions to the Earth and the Moon, respectively, during their orbits.
Within 326,000 kilometers from the Earth's center, the effect of the earth
exceeds that of the moon. In this region it is possible for a satellite to
orbit at relatively undisturbed elliptical orbits The moon has a similar zone
in which it is possible for moon satellites to orbit. Any satellites over

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450,000 kilometers from earth could orbit around the joint center of gravity of the earth-moon system. Several theoretical orbits for satellites in the earth-moon system were discussed on the basis of E. u. B. Stromgren's paper ("Astronomische Miniaturen", 1927). Orig. art. has: 4 figures.

ASSOCIATION: Urania Csillagvizsgalo (Urania Astronomical Observatory)

SUBMITTED: 00   DATE ACQ: 07 Aug 63   ENCL: 00

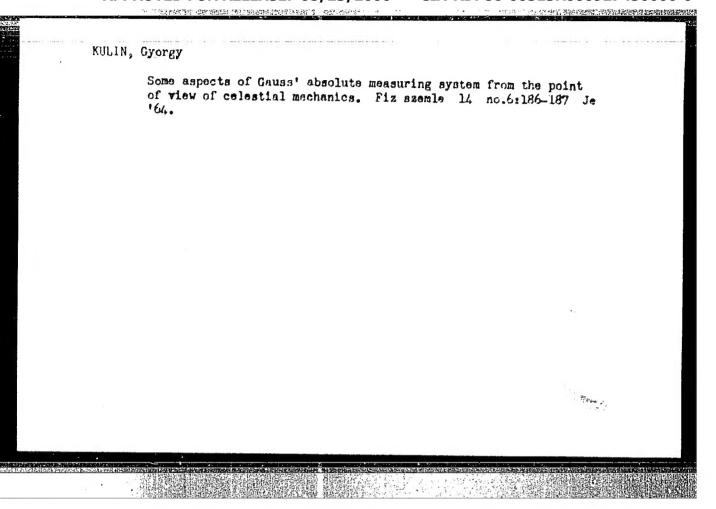SUB CODE: AS   NO REF SOV: 000   OTHER: 004

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KULIN, Gyorgy

      Mushroom superstitions. Elet tud 18 no.4:108 27 Ja '63.

      1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

KULIN, Gyorgy

Some aspects of Gauss' absolute measuring system from the point
of view of celestial mechanics. Fiz szemle 14 no.6:186-187 Je
'64.

KULIN, Gyorgy, dr.

Phenomena of the universe. Elet tud 19 no.14:641-644   3 Ap '64.

1. Editorial board member, "Elet es Tudomany."